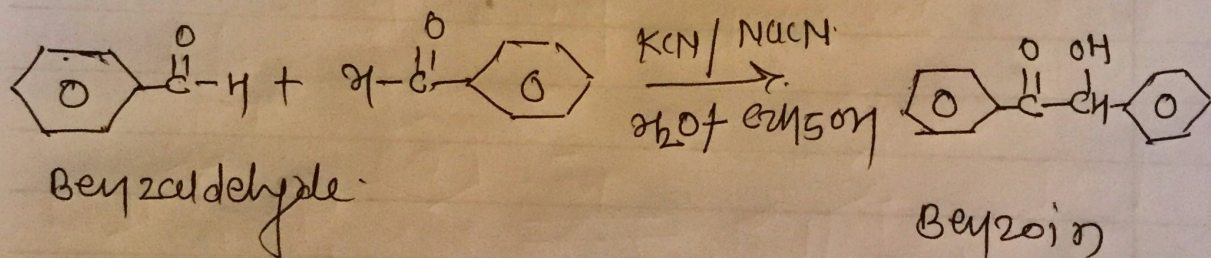


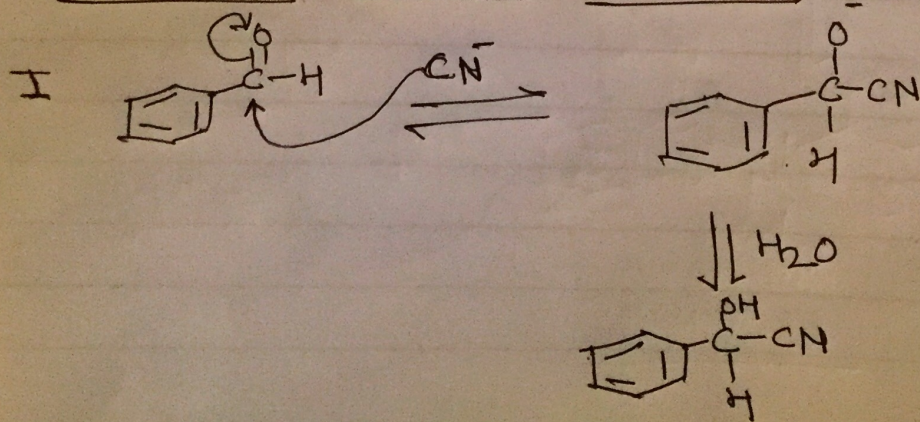
Benzoin Condensation

Aromatic aldehyde do not containing α -hydrogen on treatment with aqueous alcoholic potassium cyanide or sodium cyanide undergoes condensation to give α -hydroxy ketone called benzoin.

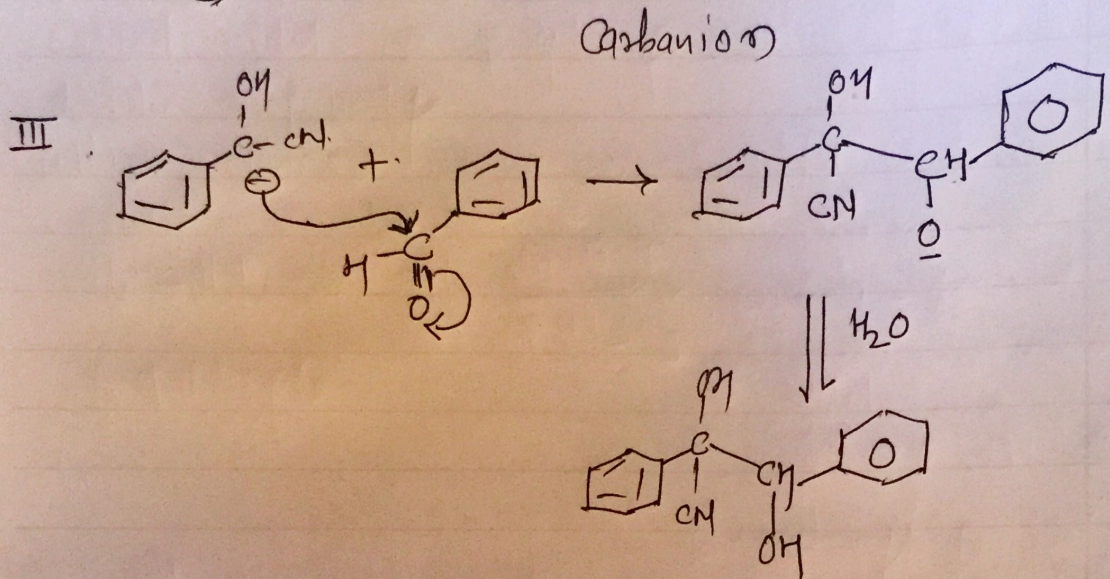
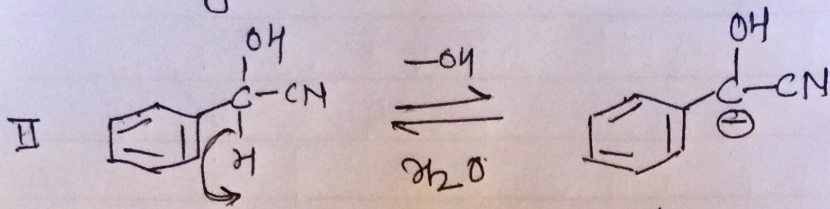
This reaction is known as Benzoin condensation.



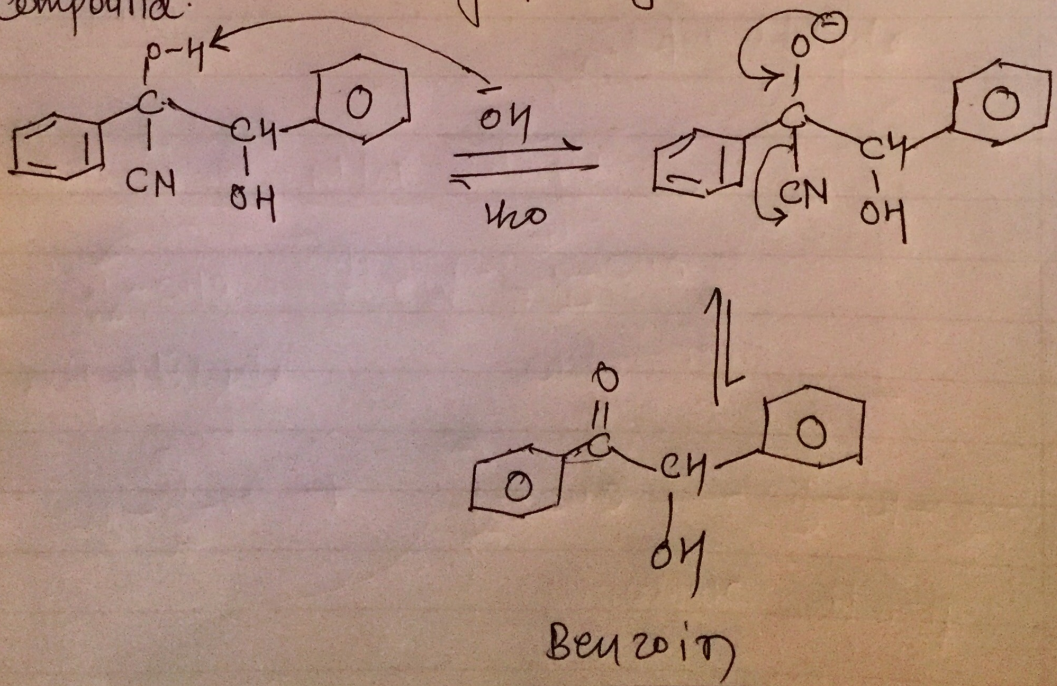
Mechanism Benzoin Condensation



Strong base deprotonate carbonyl α -atoms.



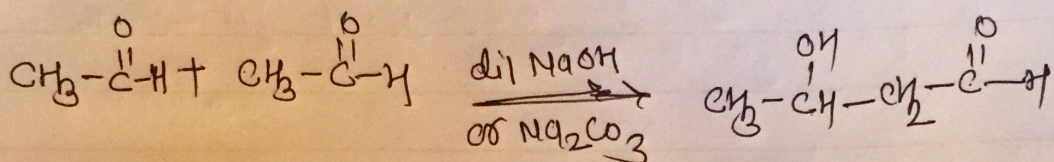
Elimination of catalyst regenerates carbonyl compound.



Aldol Condensation

Aliphatic or aromatic aldehyde and ketones containing α -hydrogen undergo condensation in presence of base to give β -hydroxy aldehyde called aldols or β -hydroxy ketones called ketols respectively.

This reaction is known as aldol condensation.

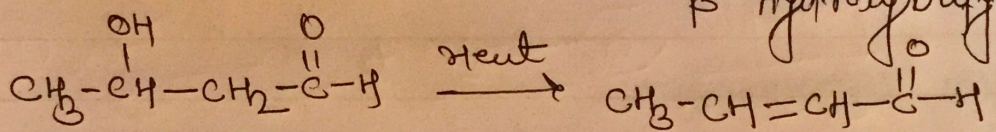


Acetaldehyde.

Aldol

β -hydroxy butanal

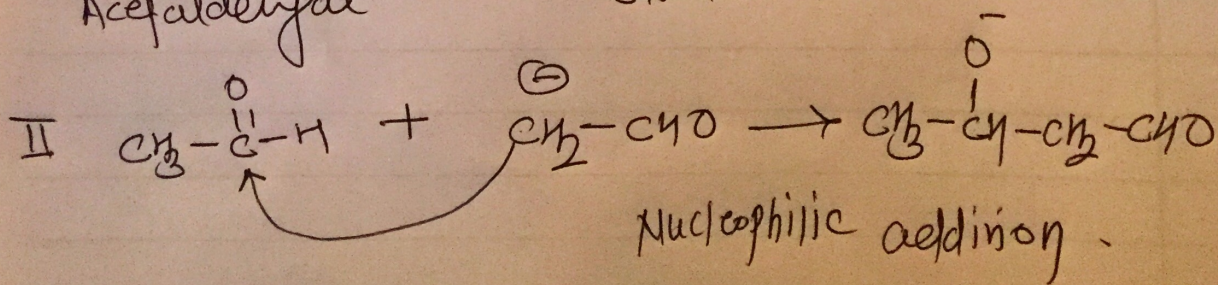
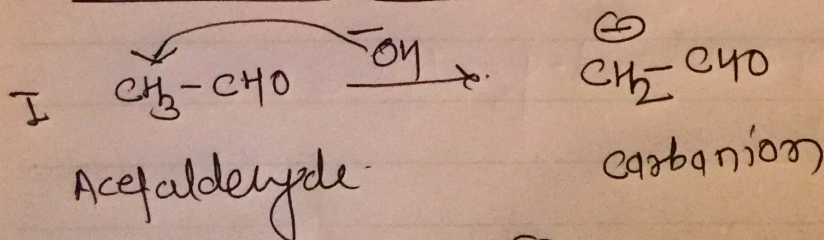
β -hydroxybutyraldehyde

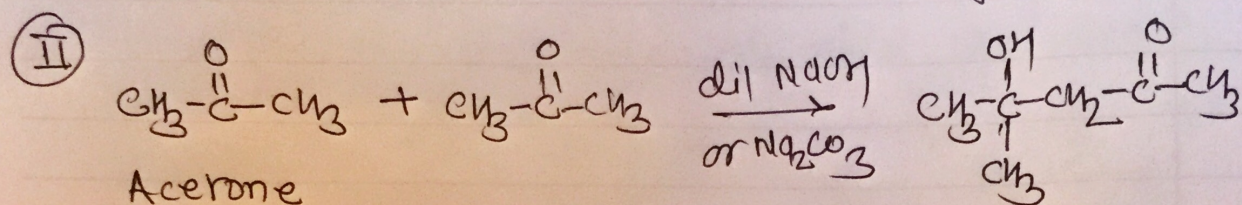
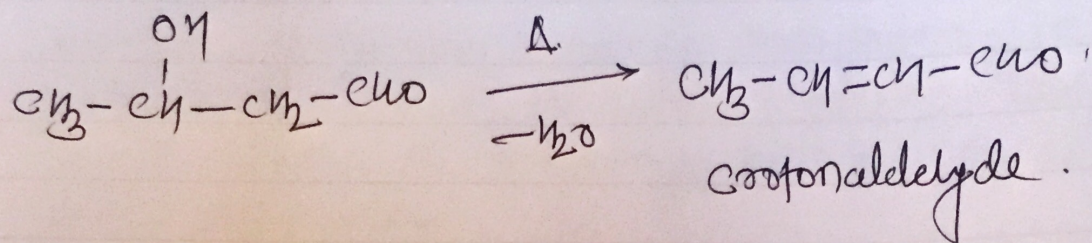
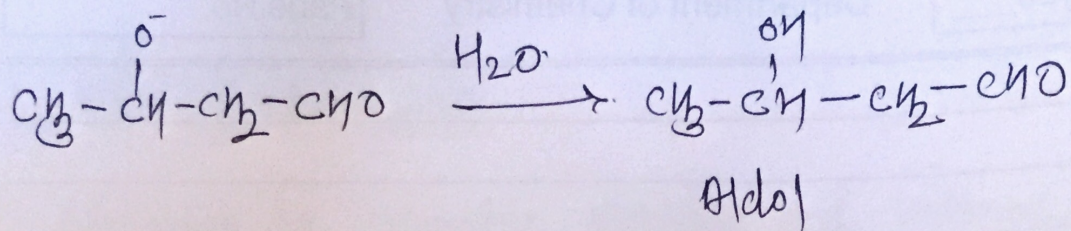


Aldol

crotonaldehyde

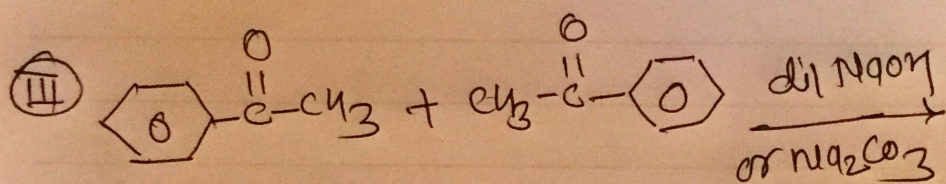
Mechanism Aldol Condensation



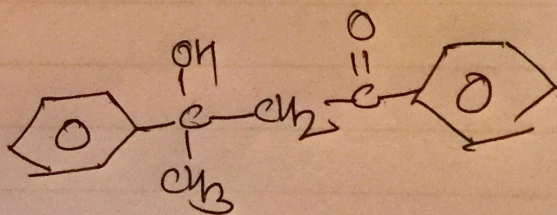


Acetone

4-hydroxy-4-methyl-2-pentanone (ketol)



Acetophenone



3-hydroxy-1,3-diphenyl-1-butanone.